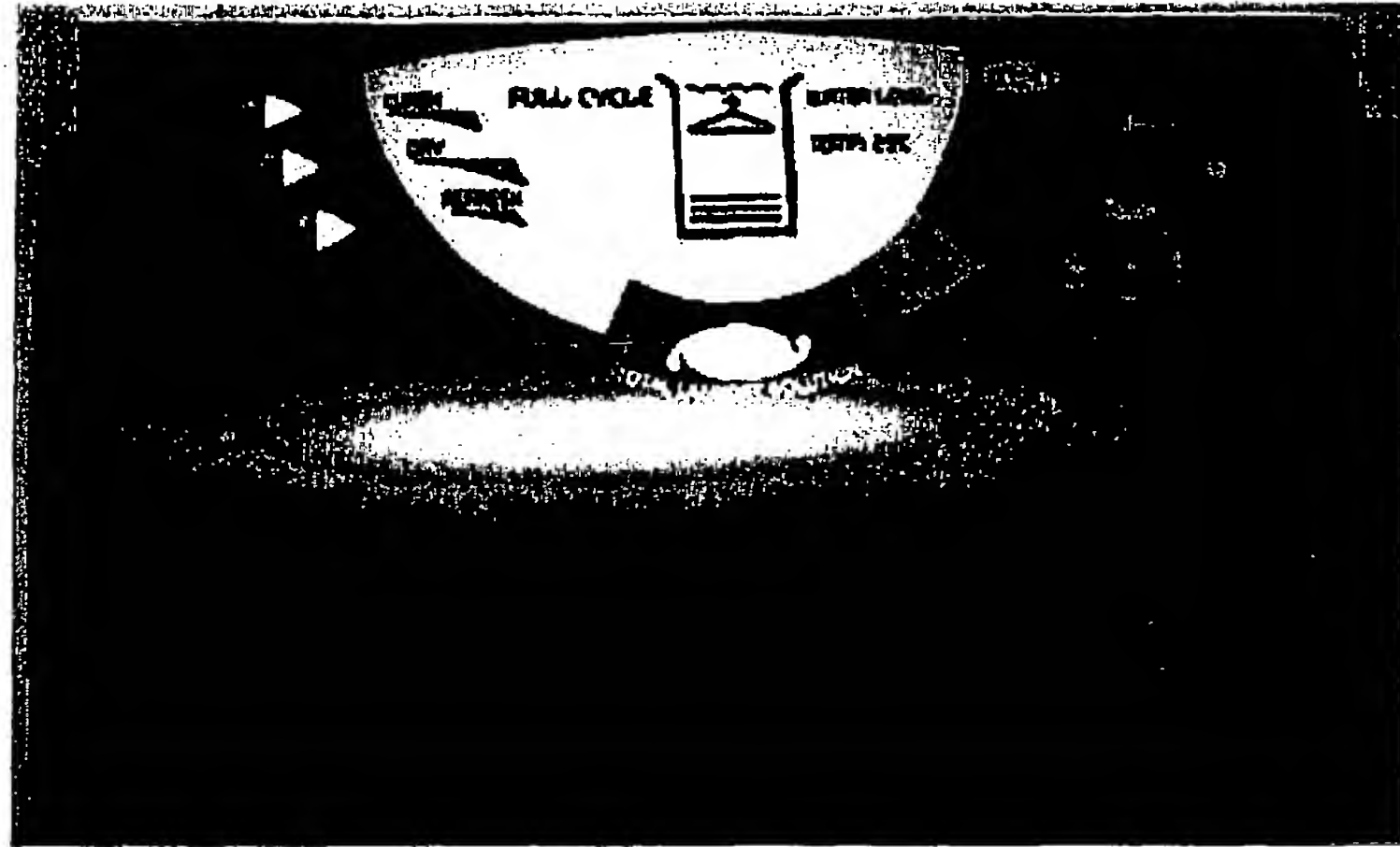


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628-01-02 : Total Laundry Solution (TLS)

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628-01-02 : Total Laundry Solution (TLS)

2.1. Title of project

Total Laundry Solution (TLS)

2.2. Description

Total Laundry Solution (TLS) is able to wash and dry clothing without wrinkles, perform the laundry in one stylish designed unit. The system is essentially a slender vertical cabinet where clothes are hung and incorporates a door with an inflatable seal creating a watertight chamber washed by ultrasonics - quicker and cleaner than ever before while a heat pump removes moisture during drying. The clothes remain in this hanging orientation throughout all processes. The water requirements are only half the floor space of a conventional top loader.

2.3. Principal function(s)

The clothes are loaded into the TLS via coat hangers or hung on the retractable line allowing garments to dry in their natural orientation. Garments are washed by ultrasonics of agitation, tiny air bubbles are created knocking off stained/soiled areas from the clothes. This process is faster, requires little detergent and has been proven to be cleaner and less damaging.

The drying process of the TLS mimics outdoor drying, using low slow heat and airflow is achieved (in the cabinet) through a heat pump and fan, which evaporates and condenses the closed system. As clothes are hung, they dry without wrinkling.

2.4. Statement of the brief for the project

Research has shown City livers have a logistical problem with drying their clothes, as backyard with a hills-hoist. Instead they struggle with tumble dryers, which do clotheshorses which take up precious apartment space.

The focus of the project was to satisfy the gap in the market for a drying apparatus. The system was designed to satisfy two aims: 1stly a drying product that does not clothing garments (as the tumble dryer does), which was non-demanding on the user the floor space taken up by the system. 2ndly the system calls for a total rethink functions as one unit and does not create associated issues of excess heat, dust, n when in operation.

2.5. Important and innovative features

The TLS has been designed to take the inconvenience out of the laundry, developing wash and dry without wrinkling garments. The system reduces the typical three-step l one simple, functional and desirable product. The system incorporates easily underst are preset at 'auto sensing' (see fig. TLS 04). The preset controls enable the TLS to performance also allowing any user to confidently operate and perform a perfect laund The sculptured recess in the back allows water hosing to neatly fit into the system, en placed up against the wall, maximising the user's space (see fig. TLS 02).

The TLS creates a watertight chamber with a hinged door by incorporating an innovi This seal (a little like a bike tube) is active throughout all 'wet' cycles and inflates l pressure. The ultrasonic wash can then take place, being quicker, cleaner and less d than current washers. As garments are hung throughout all cycles, wrinkling is reduc the 'dreaded' task of ironing.

Savings also occur with the users time. The TLS completes all tasks within the one pro longer has to wait for the washing to finish before transporting clothing to the dry, loads the system and goes about their day, saving three quarters of the time conventional laundry. The TLS is beneficial to the environment, as it users half the w top loaders and the 'grey water' produced is environment friendly, as little detergent is occur with electricity, the TLS uses 30-60% less than other systems. It incorporates n or agitators, which are noisy and produce the bulk of the breakdowns in current produ is a revolutionary product that completes all aspects of the laundry in one stylish design

2.6. Safety and Ergonomics

The TLS maximises access and internal space, as the system is front-loaded with no l inside the unit required (see fig. TLS 03). The TLS surpasses current products as all are completed within the one product, therefore there is no double handling c associated stresses and strains.

Safety precautions were taken in case of a power cut, a solenoid lock ensures the v locked and safe from spillage (locked in the 'inactive state'). The second precauti inflatable seal running around the perimeter of the door. This aids the sealing of the d by the mains water pressure. All electrical components are on the outside of the inn moisture and the users' hands. The system does not 'heat-up' like a conventional di pump was incorporated, drying clothes slowly but gently. This system reduces the incic can be a concern for tumble dryers.

2.7. Environmental features

Environmental considerations were at the forefront of the design. The small amount of produces more environmentally friendly 'grey water' for alternative uses. The TLS uses water of conventional top loaders and a reduction of 30-60% in electricity. The TLS p noise, as there are no large motors or agitators and the ultrasound is above the leve This increases its appeal to City livers as 'noise pollution' in an apartment space, is of t Hot steamy laundry rooms or a build up of mould (usually experienced with the us have been eliminated. A heat pump (which dries garments) and the design of the inn moist hot air from escaping. The floor space consumed by a product is of high priorit result, the TLS occupies less than half of the floor space of a conventional washing mac

The system has two layers; an inner layer - which houses water and clothes and ar houses the technical package and represents the exterior appearance of the system made from stainless steel, as it will be filled with water and is the structural strength

outer shell is made from molded plastic, mostly ABS. The front of the system (the door) is made from Polycarbonate as it has to withstand the pressure of the ultrasonics. Polycarbonate also has translucent properties, which aids vision into the system.

2.8. Styling / Aesthetics

Styling was also a major consideration for the design of the TLS as it has been primarily for City dwellers. It was found that City dwellers desire premium products, in both function and appearance. The outer shell of the TLS has the appearance of stainless steel (without the cost or weight) with a fresh appearance, echoing style, performance and cleanliness. Hard flowing lines run in vogue with sleek modern designs (see fig. TLS 01). The front of the system (door) is made with curved internal ribbing, mimicking the sense of using water and cleaning as we enter into the system. The easy-to-use control panel is shaped to mimic the collar of a shirt, intended use of the system and creating recognisable forms within a revolutionary product.

2.9. Manufacturing / Costing

As this design is so revolutionary, costing guidelines can only be estimated. With a new ultrasonic washer and current laundry products a costing estimate of \$700 - \$900. The retail value could be increased to \$2000 - \$2500, as the product does 'everything' in the 'high income' young City dwellers' market. A breakdown of the costing will follow: this is on a large scale of production. The ultrasonic transducers and generator will cost in the region of \$1000 (this is already in production by whitegoods manufacturers) will cost of a compressor and a closed circuit of piping). The water inlet valves and water pump cost \$50, the lengths of piping required have been minimised costing \$10. The material structural properties and therefore are more costly equating to approximately \$300 for steel and ABS/ Polycarbonate components (this cost includes some of the costs of production machines).

The TLS system has been designed to assemble onto one main frame. This frame is a steel cabinet, which has supportive feet running to the ground. The technical package is underneath this cabinet and held in place by the adjoining ABS outer shell. The outer shell is attached to the inner shell by interlocking slots and then bolted into place. This has been designed for simple assembly, with maintenance and inspection panels easily accessible.

2.10. Packaging / Marketability

The TLS has been designed to be as space saving as possible, the slim straight styling. The TLS has a sculptured recess in the back, which allows for the inlet hoses to be placed flat against the product, saving space when being packaged as a dwelling. The exterior dimensions of the product measure 1300H x 600W x 300D. The cardboard packaging will enclose the product in a pre-assembled state, the user simply opens the door and switch it on.

The TLS would be marketed as a no fuss, no effort TOTAL LAUNDRY SOLUTION. Simply load the system, close the door and the TLS will wash and dry your clothes without wrinkling.

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